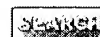



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Prakash Linga, Indranil Gupta, Ken Birman

October 2003 **Proceedings of the 2003 ACM workshop on Survivable and self-regenerative systems: in association with 10th ACM Conference on Computer and Communications Security SSRS '03**

Publisher: ACM Press

Full text available: [pdf\(1.07 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#)

Denial of service attacks on peer-to-peer (p2p) systems can arise from sources otherwise considered non-malicious. We focus on one such commonly prevalent source, called "churn". Churn arises from continued and rapid arrival and failure (or departure) of a large number of participants in the system, and traces from deployments have shown that it can lead to extremely stressful networking conditions. It has the potential to increase host loads and block a large fraction of normal insert and lo ...

2 [Session 7: Squirrel: a decentralized peer-to-peer web cache](#)

Sitaram Iyer, Antony Rowstron, Peter Druschel

July 2002 **Proceedings of the twenty-first annual symposium on Principles of distributed computing PODC '02**

Publisher: ACM Press

Full text available: [pdf\(1.22 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper presents a decentralized, peer-to-peer web cache called Squirrel. The key idea is to enable web browsers on desktop machines to share their local caches, to form an efficient and scalable web cache, without the need for dedicated hardware and the associated administrative cost. We propose and evaluate decentralized web caching algorithms for Squirrel, and discover that it exhibits performance comparable to a centralized web cache in terms of hit ratio, bandwidth usage and latency. It ...

3 [Astrolabe: A robust and scalable technology for distributed system monitoring, management, and data mining](#)

Robbert Van Renesse, Kenneth P. Birman, Werner Vogels

May 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 2

Publisher: ACM Press

Full text available: [pdf\(341.62 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Scalable management and self-organizational capabilities are emerging as central requirements for a generation of large-scale, highly dynamic, distributed applications. We

have developed an entirely new distributed information management system called Astrolabe. Astrolabe collects large-scale system state, permitting rapid updates and providing on-the-fly attribute aggregation. This latter capability permits an application to locate a resource, and also offers a scalable way to track sys ...

**Keywords:** Aggregation, epidemic protocols, failure detection, gossip, membership, publish-subscribe, scalability

4 DOS protection: Using graphic turing tests to counter automated DDoS attacks  
against web servers



William G. Morein, Angelos Stavrou, Debra L. Cook, Angelos D. Keromytis, Vishal Misra, Dan Rubenstein

October 2003 **Proceedings of the 10th ACM conference on Computer and communications security CCS '03**

**Publisher:** ACM Press

Full text available: pdf(256.83 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present WebSOS, a novel overlay-based architecture that provides guaranteed access to a web server that is targeted by a denial of service (DoS) attack. Our approach exploits two key characteristics of the web environment: its design around a human-centric interface, and the extensibility inherent in many browsers through downloadable "applets." We guarantee access to a web server for a large number of *previously unknown* users, without requiring pre-existing trust relationships between ...

**Keywords:** Java, graphic turing tests, web proxies

5 Web-conscious storage management for web proxies

Evangelos P. Markatos, Dionisios N. Pnevmatikatos, Michail D. Flouris, Manolis G. H. Katevenis

December 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 6

**Publisher:** IEEE Press

Full text available: pdf(603.11 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Many proxy servers are limited by their file I/O needs. Even when a proxy is configured with sufficient I/O hardware, the file system software often fails to provide the available bandwidth to the proxy processes. Although specialized file systems may offer a significant improvement and overcome these limitations, we believe that user-level disk management on top of industry-standard file systems can offer similar performance advantages. In this paper, we study the overheads associated with file ...

**Keywords:** secondary storage, web caching, web performance, web proxies

6 Rethinking the design of the Internet: the end-to-end arguments vs. the brave new world



Marjory S. Blumenthal, David D. Clark

August 2001 **ACM Transactions on Internet Technology (TOIT)**, Volume 1 Issue 1

**Publisher:** ACM Press

Full text available: pdf(176.33 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This article looks at the Internet and the changing set of requirements for the Internet as it becomes more commercial, more oriented toward the consumer, and used for a wider

set of purposes. We discuss a set of principles that have guided the design of the Internet, called the end-to-end arguments, and we conclude that there is a risk that the range of new requirements now emerging could have the consequence of compromising the Internet's original design principles. Were ...

**Keywords:** ISP, Internet, end-to-end argument

## 7 Content-triggered trust negotiation



Adam Hess, Jason Holt, Jared Jacobson, Kent E. Seamons

August 2004 **ACM Transactions on Information and System Security (TISSEC)**, Volume 7 Issue 3

**Publisher:** ACM Press

Full text available: [pdf\(815.36 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The focus of access control in client/server environments is on protecting sensitive server resources by determining whether or not a client is authorized to access those resources. The set of resources is usually static, and an access control policy associated with each resource specifies who is authorized to access the resource. In this article, we turn the traditional client/server access control model on its head and address how to protect the sensitive content that clients disclose to and r ...

**Keywords:** Trust negotiation, access control, authentication, credentials

## 8 Survey of network-based defense mechanisms countering the DoS and DDoS problems



Tao Peng, Christopher Leckie, Kotagiri Ramamohanarao

April 2007 **ACM Computing Surveys (CSUR)**, Volume 39 Issue 1

**Publisher:** ACM Press

Full text available: [pdf\(1.17 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This article presents a survey of denial of service attacks and the methods that have been proposed for defense against these attacks. In this survey, we analyze the design decisions in the Internet that have created the potential for denial of service attacks. We review the state-of-art mechanisms for defending against denial of service attacks, compare the strengths and weaknesses of each proposal, and discuss potential countermeasures against each defense mechanism. We conclude by highlight ...

**Keywords:** Botnet, DDoS, DNS reflector attack, DoS, IP spoofing, IP traceback, IRC, Internet security, SYN flood, VoIP security, bandwidth attack, resource management

## 9 Security: LIGER: implementing efficient hybrid security mechanisms for heterogeneous sensor networks



Patrick Traynor, Raju Kumar, Hussain Bin Saad, Guohong Cao, Thomas La Porta

June 2006 **Proceedings of the 4th international conference on Mobile systems, applications and services MobiSys 2006**

**Publisher:** ACM Press

Full text available: [pdf\(592.00 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The majority of security schemes available for sensor networks assume deployment in areas without access to a wired infrastructure. More specifically, nodes in these networks are unable to leverage key distribution centers (KDCs) to assist them with key management. In networks with a heterogeneous mix of nodes, however, it is not unrealistic to assume that some more powerful nodes have at least intermittent contact

with a backbone network. For instance, an air-deployed battlefield network may ha ...

**Keywords:** heterogeneous sensor networks, hybrid network security, probabilistic authentication, probabilistic key management

#### 10 The architecture of robust publishing systems



Marc Waldman, Aviel D. Rubin, Lorrie Faith Cranor

November 2001 **ACM Transactions on Internet Technology (TOIT)**, Volume 1 Issue 2

**Publisher:** ACM Press

Full text available: [pdf\(680.21 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The Internet in its present form does not protect content from censorship. It is straightforward to trace any document back to a specific Web server, and usually directly to an individual. As we discuss below, there are valid reasons for publishing a document in a censorship-resistant manner. Unfortunately, few tools exist that facilitate this form of publishing. We describe the architecture of robust systems for publishing content on the Web. The discussion is in the context of Publius, as that ...

**Keywords:** Censorship resistance, Web publishing

#### 11 Features: Instant Messaging or Instant Headache?



John Stone, Sarah Merrion

April 2004 **Queue**, Volume 2 Issue 2

**Publisher:** ACM Press

Full text available: [pdf\(2.55 MB\)](#) Additional Information: [full citation](#), [index terms](#)  
 [html\(33.74 KB\)](#)

#### 12 Diagnosis of TCP overlay connection failures using bayesian networks



George J. Lee, Lindsey Poole

September 2006 **Proceedings of the 2006 SIGCOMM workshop on Mining network data MineNet '06**

**Publisher:** ACM Press

Full text available: [pdf\(102.17 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

When failures occur in Internet overlay connections today, it is difficult for users to determine the root cause of failure. An overlay connection may require TCP connections between a series of overlay nodes to succeed, but accurately determining which of these connections has failed is difficult for users without access to the internal workings of the overlay. Diagnosis using active probing is costly and may be inaccurate if probe packets are filtered or blocked. To address this problem, we de ...

**Keywords:** TCP overlay path diagnosis, bayesian networks, fault diagnosis, passive diagnosis, planetseer

#### 13 Digital village: Responsible web caching



Hal Berghel

September 2002 **Communications of the ACM**, Volume 45 Issue 9

**Publisher:** ACM Press

Full text available: [pdf\(144.05 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)  
 [html\(40.45 KB\)](#)

Putting the distribution control of the Web's intellectual content in the hands of those who created it.

14 Workshop on compositional software architectures: workshop report



May 1998 **ACM SIGSOFT Software Engineering Notes**, Volume 23 Issue 3

**Publisher:** ACM Press

Full text available: pdf(2.91 MB) Additional Information: [full citation](#), [index terms](#)

15 Applications and architecture: SHOCK: communicating with computational messages and automatic private profiles



Rajan M. Lukose, Eytan Adar, Joshua R. Tyler, Caesar Sengupta

May 2003 **Proceedings of the 12th international conference on World Wide Web WWW '03**

**Publisher:** ACM Press

Full text available: pdf(693.99 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A computationally enhanced message contains some embedded programmatic components that are interpreted and executed automatically upon receipt. Unlike ordinary text email or instant messages, they make possible a number of useful applications. In this paper, we describe a general and flexible messaging system called SHOCK that extends the functionality of prior computational email systems by allowing XML-encoded SHOCK messages to interact with an automatically created profile of a user. These pr ...

**Keywords:** collaborative systems, networking and distributed web applications, privacy and preferences

16 Building an intranet in the laboratory

Bruce P. Tis

April 2000 **Journal of Computing Sciences in Colleges , Proceedings of the fifth annual CCSC northeastern conference on The journal of computing in small colleges CCSC '00**, Volume 15 Issue 5

**Publisher:** Consortium for Computing Sciences in Colleges

Full text available: pdf(38.58 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

17 Current research trends in internet servers



K. Kant, Prasant Mohapatra

September 2001 **ACM SIGMETRICS Performance Evaluation Review**, Volume 29 Issue 2

**Publisher:** ACM Press

Full text available: pdf(366.76 KB) Additional Information: [full citation](#), [references](#)

18 Pedagogy: The effect of a university information security survey on instruction methods in information security



Frank H. Katz

September 2005 **Proceedings of the 2nd annual conference on Information security curriculum development InfoSecCD '05**

**Publisher:** ACM Press

Full text available: pdf(90.57 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper reports on the need for Information Security Awareness educational programs

to supplement teaching in Information Security. The need for such a program is demonstrated by findings resulting from a survey of university faculty and staff at Armstrong Atlantic State University conducted from February through April 2005 regarding the information security behaviors of such employees.

**Keywords:** curriculum development, curriculum instruction, information assurance, information assurance curriculum, information security, information security curriculum

#### 19 Internet intrusions: global characteristics and prevalence



Vinod Yegneswaran, Paul Barford, Johannes Ullrich

June 2003 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 2003 ACM SIGMETRICS international conference on Measurement and modeling of computer systems SIGMETRICS '03**, Volume 31 Issue 1

**Publisher:** ACM Press

Full text available: [pdf\(699.44 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Network intrusions have been a fact of life in the Internet for many years. However, as is the case with many other types of Internet-wide phenomena, gaining insight into the *global* characteristics of intrusions is challenging. In this paper we address this problem by systematically analyzing a set of firewall logs collected over four months from over 1600 different networks world wide. The first part of our study is a general analysis focused on the issues of distribution, categorization ...

**Keywords:** internet performance and monitoring, network security, wide area measurement

#### 20 On Inferring Application Protocol Behaviors in Encrypted Network Traffic

Charles V. Wright, Fabian Monrose, Gerald M. Masson

December 2006 **The Journal of Machine Learning Research**, Volume 7

**Publisher:** MIT Press

Full text available: [pdf\(309.38 KB\)](#)

Additional Information: [full citation](#), [abstract](#)

Several fundamental security mechanisms for restricting access to network resources rely on the ability of a reference monitor to inspect the contents of traffic as it traverses the network. However, with the increasing popularity of cryptographic protocols, the traditional means of inspecting packet contents to enforce security policies is no longer a viable approach as message contents are concealed by encryption. In this paper, we investigate the extent to which common application protocol ...

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L2	1	L1 and (registration adj manager same (message adj box messagebox))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/16 17:06
L3	3	L1 and (registration adj manager )	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/16 17:06
S1	1	("7043644").PN.	US-PGPUB; USPAT	OR	OFF	2007/08/06 16:59
S2	1	("6052718").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2007/08/08 15:29
S3	0	("7043644").URPN.	USPAT	OR	ON	2007/08/08 15:30
S4	5	((("20030112823") or ("20040162871") or ("20030105812") or ("20030084162") or ("7043644"))).PN.	US-PGPUB; USPAT	OR	OFF	2007/08/08 15:53
S5	331	(726/12).CCLS.	US-PGPUB; USPAT	OR	OFF	2007/08/09 12:49
S6	1634	(726/3,12-14).CCLS.	US-PGPUB; USPAT	OR	OFF	2007/08/16 17:05
S7	0	S6 and (peer adj to adj peer)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/08 15:57
S8	99	S6 and ("peer-to-peer")	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/08 15:57
S9	0	S6 and (http adj packet) with translats\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/08 16:00

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S11	47	(http adj (request response packet submission)) with translat\$3 same (proxy)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 12:42
S12	9	S6 and (http adj (request response packet submission)) with translat\$3	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/08 16:33
S13	27	(http adj (request response packet)) with translat\$3 with (original back)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 12:43
S16	6	("5778174"   "5793763"   "5826029"   "5828833"   "5909549"   "6104716").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2007/08/09 12:51
S17	79	("6104716").URPN.	USPAT	OR	ON	2007/08/09 13:55
S18	1	("6349336").PN.	US-PGPUB; USPAT	OR	OFF	2007/08/09 14:34
S19	19	(notify notification notifying) with (email e-mail) with (content near4 view\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 14:36
S20	39	(notify notification notifying) with (email e-mail) with ((image content) near4 view\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 14:37
S21	67	(notify notification notifying) with (email e-mail) with (new near4 (content image))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 14:38



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S23	50	(packet with chunk same multiplex\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/08/09 15:34
S24	1	("20060259956").PN.	US-PGPUB; USPAT	OR	OFF	2007/08/09 17:09